

Hobbies

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Price Threepence

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SUPPLEMENT SHEET
FOR TRAVELLING
CIRCUS CAGE

How you can construct, for table use, a small SKIBALL ALLEY

ONE of the most popular attractions to be found in the amusement parks and centres is the skiball alley. Many of our readers have, without doubt, enjoyed trying their skill at this game. We all cannot afford to have a private skiball alley but any handy man can easily construct a small one with reasonable outlay.

The size may be varied to suit the maker's convenience, and we suggest here that instead of bowling the balls as is usual in the full-size model, they be shot with a spring gun as our illustration, Fig. 1, shows.

For Table Use

The size of the game to suit an ordinary table is suggested here as being about a 2ft. 6ins. long alley way with an 8in. high by 7in. wide box end as shown in Fig. 2.

The diagrams given are almost self-explanatory. The thickness of wood may be anything from $\frac{1}{4}$ in. to $\frac{1}{2}$ in. for the main parts.

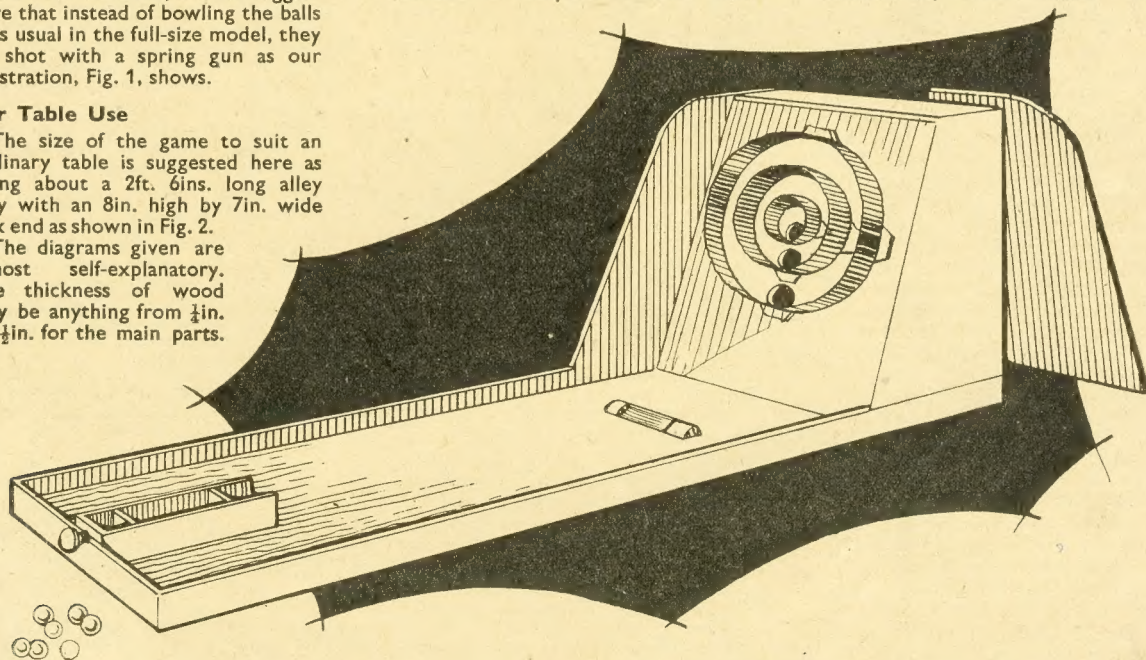
For the base of the alley, wood $\frac{1}{2}$ ins. thick should be chosen and a smooth surface made with glasspaper. An edging to the base might be of $\frac{1}{4}$ in. wood about $\frac{1}{2}$ in. wide and glued to the top with a few fret pins added for strength. A complete tray is thus formed and the upright box end either stood upon the edging, or placed just inside it.

In describing the box, the three diagrams, Figs. 2, 3 and 4, must be studied in conjunction with each

other. Fig. 2 shows the front which is set at a slight slope to the surface level of the base-board or alley. On the front, set out the lines of the three large circles, to which later will be glued the cardboard strips that stand out at right angles to the sloping front.

Ball Openings

Next describe on the surface, and within the three circles just mentioned, three smaller circles



$\frac{3}{4}$ in. diameter touching the lower edge of each of the large circles (see Fig. 2). Cut out the three small circles with the fretsaw, and then bend three lengths of card with gluing tabs attached for attaching to the front as in Figs. 2 and 3.

The Front

The sloping front is shown as C, in Fig. 4, and this will be glued to two sides, B, which should measure $7\frac{1}{2}$ ins. high by $3\frac{1}{2}$ ins. at base and $1\frac{1}{2}$ ins. at top. A back board, D, is

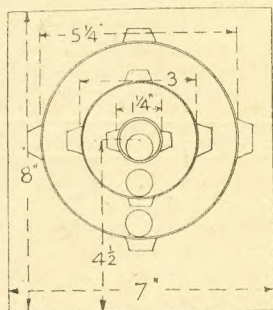


Fig. 2—Diagram of front

next fitted on. In this piece must be cut a door about 3ins. by 2ins. through which the balls are extracted at the end of each game. The door is shown in both diagrams, Figs. 3 and 4.

Now cut from $\frac{1}{2}$ in. wood the three floors, E, F and G, the correct sizes for these being measured direct from the parts so far assembled. Bear in mind, however, that the main back, D, should only be screwed on and not glued. Then to the edges of the floors fit and glue the two sides, H (see Fig. 4). These also can be of $\frac{1}{2}$ in. wood.

Top and Door

The top of the box, I, is next measured for and fixed on the front, C, and sides, B. Hinge the door in place to the back by means of gummed tape or, perhaps, a pair of small hinges. Fix on the door a handle and just above this on the back, D, a small wood turnbuckle to hold the door closed.

The door, as will be seen in Fig. 3, closes against the back edges of the floors, E, F and G, and to the back edges each of these floors, is glued on a strip of wood to prevent the balls falling out when the door is opened. The balls, of course, are removed by hand after the game, note being taken of the number of balls removed from each partition as "1, 2 or 3".

Interior Parts

The section of the box in Fig. 3 is very useful as showing the positions of all the interior parts in relation to each other. The projecting wings, shown as X, in Fig. 3, may consist of card cut to shape and either glued direct to the sides of the box or fixed more or less in a temporary

way, so that they can be removed easily when it is required to pack up the whole game.

In Fig. 4, and also in Fig. 1, is shown what we call the "jumping block". This is a shaped length of wood attached to the alley board in such a position that when a ball is shot, it jumps at an angle and falls into one or the other of the card rings and thus through the hole in the sloping front into one of the divisions behind. Scoring

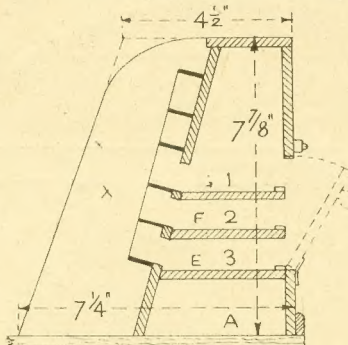


Fig. 3—Section of the box portion

run smoothly and freely within the "tray" made for it. When it is drawn forward and then released it must quickly spring back and so shoot forward the ball which has been laid in position against piece, N.

When made up and complete, the gun is pivoted to the alley board by a screw as, P, in Fig. 5. It will thus be

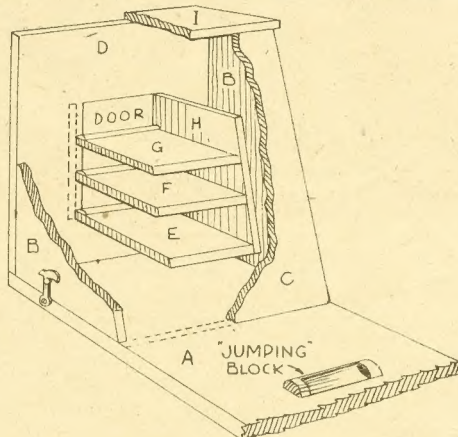


Fig. 4—Cut-away view showing ball trays

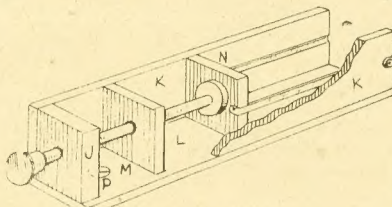


Fig. 5—Mechanism of the plunger

can thus be kept.

To get the correct cross section of wood for the jumping block, and indeed, to get the required distance, it should stand away from the front, C, is a matter of experiment. It may be that the block should be hollowed or rounded in section to get the right pitch. Trials must be made in the shooting before the true position can be decided upon.

Plunger Parts

The gun is an interesting item to make, as Fig. 5 shows. On a floor, L, is glued the two sides, K, and in between these again the end, J, and piece, M, is glued. Piece, J, should be of rather thicker wood than the rest of the pieces and it should be nailed as well as glued to the pieces, L and K. Holes a full $\frac{1}{4}$ in. diameter should be cut in the blocks, J and M, for a length of $\frac{1}{4}$ in. rod to slide easily along. To the extreme end of the rod the square block, N, is attached.

This rod must be firmly glued into N, and a disc of wood also glued to, N, over the rod to give greater holding power at this point. Shallow grooves are wanted at each side of piece, N, to allow strip elastic being attached to it as shown. The elastic is long enough to extend to the front of the gun and there held by screws and small washers. Piece, N, must

seen that a certain amount of "sighting" can be carried out to get the ball either to the right or to the left of centre as required.

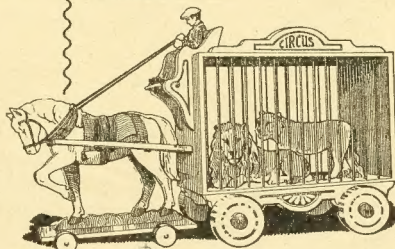
In the picture is shown how the knob handle attached to the rod is carried in a groove cut in the edging board of the alley way. Also here is shown one of the side wings detached from the box for sake of illustrating clearly the front of the box and its rings, etc.

Scoring

Scoring for the game might be arranged by allowing, say, 5 points to each ball in compartment No. 1; in the second compartment, No. 2, 3 points, and in the third, No. 3, 1 point. Paint or varnish would make a suitable finish for all the parts, but it is suggested that the surface on the sloping front between the card rings should be painted white to show up plainly.

A TRAVELLING CIRCUS CAGE

Patterns and instructions for this novelty on Design Sheet 2784. Kit of wood, wheels and screws from Hobbies Branches for 2/9. Sent post free for 3/6 from Hobbies Ltd., Dereham, Norfolk.



The fretsaw can produce novel effects by ANGLE CUTTING

THE ordinary use of the fretsaw as all our readers know, necessitates the sawblade being constantly used vertically. It seems strange now to recommend its cutting at a slight angle, and the introduction of this suggestion may be something quite new to many of our readers who have not followed these pages over a number of years.

The possibility of a sloping cut does, however, open a new field of work, and very often makes a great economy in wood apart from introducing a novelty in style and procedure. Indeed, one piece of fretwood can be made to do the work of two or three, providing the article is of a type suitable to the process involved.

This method of cutting was named Antofret many years ago, because it

into its surrounding wood, but will not pass the whole way through.

In consequence, two distinct layers of wood are made from the same board. Providing the same angle of the fretsaw is maintained all the way through, the cut-out piece will wedge itself very firmly into its surrounding wood. The actual angle of cutting is very slight and, of course, it varies with the thickness of the wood. The difference of angle, too, will provide for the pressed-out piece to go further or not so far.

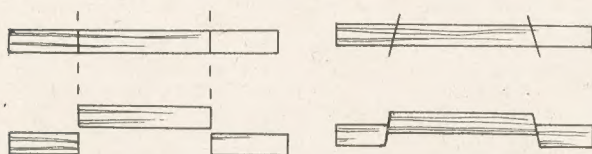
Double Thicknesses

If you look at the diagrams herewith, you will see the process clearly. With wood $\frac{3}{8}$ in. or $\frac{1}{2}$ in. thick, the angle is very slight, and the cut-out piece can be pressed through two-thirds of the way before it

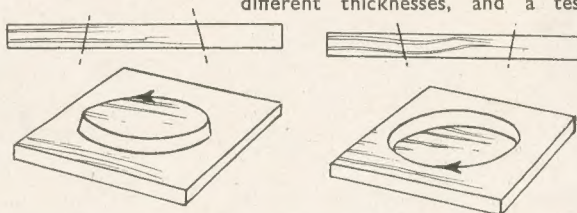
straight lines so far as the pieces cut out are concerned. You can see that in cutting round a circle there is a constant sweep maintained without any actual angle. With a rectangle, however, you have definite corners, and these it is much more difficult to turn with the saw at the correct angle.

Obviously, too, the owner of the machine has a big advantage in this direction because he can tilt his table and still maintain a vertical sawblade. An experiment for the actual angle of the tilt will soon show what is required, and in this there is no need to cut interior frets, but merely to go in from the edge, take a sweep round and come out at the same point.

A different angle of the table will, of course, be required for the different thicknesses, and a test



The difference of upright and sloping sawcut



Press up or down is result of sawcut direction

was originated by an Italian priest—Mgr. Antonini—who, in the days of plentiful supplies of wood and paper, was able to experiment and produce many designs which were very popular at that time. Let us, therefore, look at the simple method first, and in order that we may appreciate what is done and what happens.

Cutting at an Angle

The whole system relies on the sloping sawcut instead of the usual vertical one. The operation could be incorporated into any normal thickness of fretwood. In the ordinary

sticks. On the other hand, if the angle of cutting is a little more, the piece pressed out will stick less than half way through. This cutting and angle is entirely a matter of experiment, but proves an interesting and novel undertaking.

Again, the direction in which you cut will alter the part being pressed out, as you see by the diagrams. If you are cutting the piece with the saw sloping inwards and downwards, then the piece so cut out can be pressed downwards. If the saw is sloping the other way—inwards towards the top—then obviously the reverse process results, and the

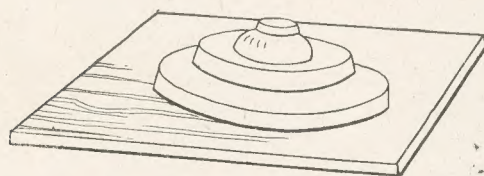
should be made on each piece of wood being used. Fix the table tightly and remember to cut always in the same direction.

Direction Alters Result

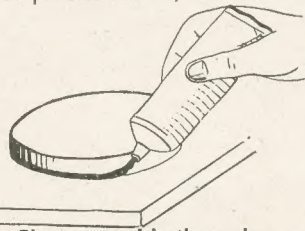
Most people have a habit of going one way only in normal work. This, in the type of cutting now being mentioned will, of course, produce parts which can be pressed one way only either up or down. In consequence, if they want to reverse the part cut out and sink it instead of raising it, then the direction of cut must be opposite from that which is normally used.

In pre-war times the user of the handframe had the opportunity of buying a special tilting table, which was the ordinary cutting table raised on a pillar and provided with a wingnut underneath which allowed the actual table surface to be depressed for the necessary angle. Although this is not available now, the keen fretsaw user can bring about the same effect by wedging up one side of his ordinary cutting table to produce the tilt required for the angle cutting.

This is quite satisfactory for small pieces but if the wood is wider than the cutting table itself, then it will press on to the ordinary workbench or table and so alter the actual slope. You could probably overcome this by having an extension to your working



Three layers from one piece



Glue squeezed in the angle

way, if you make a drill hole in a board and then cut out a piece of wood from its centre, that piece of wood will fall out.

If, however, you cut the same shape with the fretsaw at a slight angle, the result is different. When the sawblade is withdrawn, the piece of wood cut round can be pressed

piece cut out will only press upwards. The worker must maintain perfect control on the fretsaw because, of course, if any part of the line is cut at a different angle from the rest, then this will effect the whole part when it comes to be pressed out to its final position.

Again, curves are better than

table and fit the tilting table to the end of that. This will allow larger work to be operated providing your cutting table is raised sufficiently to allow the swing of the wood in all directions.

Position of Drill Hole

All the work, you will notice, is taken from the interior of the board, and can thus be very well utilized for simple fretwork patterns by making them all stand up or down according to the process maintained. Remember, too, that in this interior



A plain animal outline

work a drill hole has to be made, but this does not want to be seen in the finished article.

Use a drill point, therefore, making a hole just large enough to take the fretsaw blade. Use it with the wood at the cutting angle, and if you have any actual corners, make the hole in one of them to be as little obvious as possible.

In this connection, too, you must remember that even the variation in the thickness of fretsaw will make a difference in the slope and the amount of press-through which is obtained. If you have a very fine fretsaw, then obviously the wood will not press through far.

With a thick sawblade you are

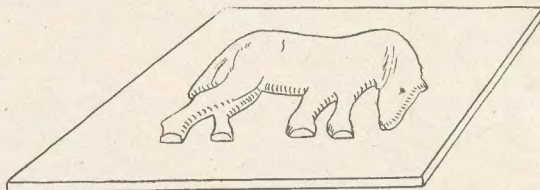
taking out more on the cutting line, and in consequence the cut-out part has more space to be pushed through before it sticks. The main point is to use the same grade of fretsaw blade throughout, and not change from fine to coarse, or vice versa half-way through the work.

When the parts are cut, they can be pressed either upwards or downwards according to the direction, and usually wedge themselves into the surrounding piece quite firmly. You can, however, make the whole work quite rigid by running a thin ribbon

sisting of three or four steps from a single piece of wood, varying the thickness of the projecting parts merely by altering the angle of cutting. In a larger piece of work you can make a rim to a photograph frame or a tray, or a similar article when you have become experienced enough to undertake it. The edges, too, so built up, can be varied by rounding off one and leaving the next one square.

Carved Effects

The work also provides an imi-



A more realistic effect with carving

of glue into the angle of the cut to bind the two pieces further together.

Gluing the Parts

This gluing should be done on the side of the wood which is not intended to be visible when the article is in use. The wood can be cleaned, and stained and polished in the ordinary way, but you must remember not to attempt to glass-paper any of the edges which are cut with the fretsaw, or you will alter the slope and so be likely to form a gap between the two joining pieces.

The possibilities of the work will be seen on giving a little thought to some of the results. You could, for instance, make a base plinth con-

tation carved effect very simply. You can, for instance, cut out the shape of an animal with the angle cut, press it out until it sticks and then round its edges and carve its figure to make the animal stand out in pleasing relief. The general work of marking the design out, cutting and cleaning and finishing is all done in the normal way.

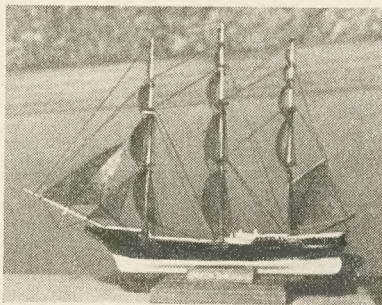
The novelty of the suggestion will, we know, appeal very largely to many of our readers and we certainly recommend them to try out the process on some odd pieces of wood, and see how they can incorporate it in their normal work. It will provide a pleasing and novel result which you will find most attractive.

From the Editor's Notebook—

THERE is apparently a new craze taking the place of collecting engine numbers—that of bus marking. This is particularly in London where each bus bears distinguishing marks which to the initiated reveal its length of service, the depot from which it operates, its place in the daily schedule, etc. A realization of this has apparently led to a search for and reading of data on vehicles unfamiliar in their own districts. The movement of "Old Bill" from depot to depot is followed with avid interest by youngsters anxious to add to their "collection" this veteran of the first World War.

I HAVE spoken before about models being made all over the country of the old-time ship *The Green Dolphin*. This is in connection with a popular film "Green Dolphin Street", which M.G.M. have released after a successful run in London. Competitions are being

arranged by the local cinema managers for the best models from a small kit of parts supplied by Hobbies, Ltd. One of the most successful yet held was with the showing at Olympia, Cardiff. There were 1,000



entries received, and the winner was a 15½ year-old boy, Leslie Masterton of Clark's College, Cardiff.

The competition aroused much

local interest, and a photograph of the 1st Prize Model is given here. If the picture has not yet been in your district, watch out for it.

ONE of the best general collections of birds' eggs in the South of England is that owned by Mr. T. R. N. Crofts, of Sunset, Wrecclesham. Containing no fewer than 30,000 specimens, the collection embraces some 2,500 varieties of all shapes, colours, and sizes, and from all quarters of the globe. Interested in collecting birds' eggs from the age of 13, when he lived in Warwickshire, he has been able to devote more time to the hobby since his retirement.

Mr. Crofts is of the opinion that those interested should take up bird watching as a hobby before collecting eggs. If they began collecting, he said, they should do it "scientifically".

The Editor

When to expect the best results in SHORT WAVE LISTENING

THE interest in short wave listening has increased greatly during the last few years. Many household receivers have one or more short wave ranges and constructors are building sets specially for short wave use.

Some listeners get very good results. Some seem to get only disappointing results—apparently because they do not listen on the right wavelengths at the right time.

Difference to Long and Medium Waves

If a good receiver is tuned through the Medium Wave band, stations will be heard almost all round the dial, but the user who expects similar results on short waves will be disappointed. On short waves, most stations are congregated into 'bands'. Between these bands practically no stations transmit—except morse stations, remote control transmitters, relay stations using scrambled speech and similar things having only a curiosity value for the ordinary listener.

The hour of the day (or night) also greatly influences reception. So the different bands shown in the diagram should be considered in relation to the following notes if results are not to be disappointing.

10 Metre Band

This comes first, extending a little way up from near 10 metres. It is used by amateur transmitters who radiate for experimental purposes, and is accordingly most active over the week-ends.

Results on it are usually best from early morning to afternoon, with stations in the western hemisphere (e.g. America) tending to come up somewhat later. During the hours of darkness it is usual for nothing whatever to be audible on this band.

13 Metre Band

This acts similarly to the 10 metre band, but is reserved for ordinary broadcasting stations. Conditions on it are often erratic, though a number of stations can be heard during the earlier hours of the day.

When conditions are good, it is not unusual to hear an echo when listening to a powerful station, showing the signal has encircled the earth and been heard a second time.

17 and 19 Metre Bands

These (reserved for broadcast stations) give very good long distance results during afternoon and early evening. In the morning they are almost silent, as well as during the night.

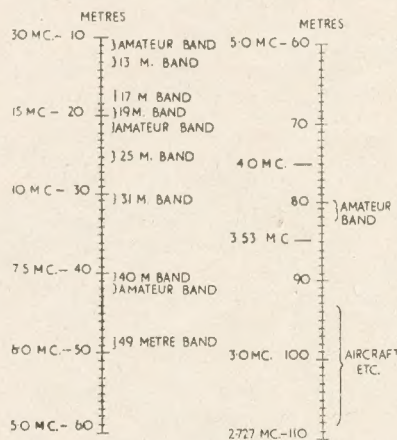
During the evening, 19 metre band is crowded with scores of stations, each within a fraction of a degree of the other.

25 and 31 Metre Bands

These are also used by ordinary stations only. They are usually at their best from late afternoon to late evening. However, they also carry Far East and Australian stations in the early afternoon and morning.

Other Amateur Bands

Round about 21 and 42 metres are the so-called 20 and 40 metre bands used by amateurs. Both are extremely active over week-ends when their



The short wave spectrum

owners will be heard discussing experiments with various circuits, etc.

During early evening, it is usual to hear many U.S.A. transmitters on the 20 metre band. At the same time the 40 metre band will be congested with English and European stations, with a few more remote ones occasionally.

The next amateur band is round 80 to 82 metres. Little or nothing is heard here during the earlier hours, but with darkness some stations are heard.

49 Metre Band

This does, from early darkness until midnight, what the 19 and 25 metre bands do earlier in the day. From 8 or 9 p.m. (somewhat earlier during winter) many stations will be heard here.

The band is reserved for ordinary broadcasts, as is the 40 metre band coming immediately below the 41 metre amateur band.

How to Listen

The foregoing may seem complicated, but is not really so. It has been given in detail to avoid the disappointment which can arise when a short wave set is tuned at random, and only a few code stations or local transmitters heard.

Quite probably the set may be capable of excellent results if properly used. Reception of stations throughout the whole of the world with only a single-valver is now so usual it has ceased to be surprising.

It is absolutely essential tuning should be carried out slowly. At these high frequencies, it is possible to tune completely through a station without hearing it (which would not happen on medium or long waves). Similarly, the reaction control must be advanced so that the set is almost oscillating. If it is not, weak signals will not be heard.

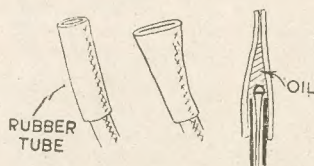
Frequency and Wavelength

The use of frequency (given in kilocycles or megacycles) instead of wavelength figures is gaining favour. The diagram also shows frequencies in megacycles for various wavelengths.

To convert frequency into wavelength, or vice versa, divide the figure into 300,000,000—the speed of wireless waves in metres per second. (e.g. a station using 300 metres has a frequency of 1,000,000 cycles; that is, 1,000 kilocycles, or 1 megacycle. A kilocycle equals 1,000 cycles; a megacycle equals 1,000,000 cycles.)

Cable Lubrication

MANY cyclists with cycles equipped with cable brakes, experience cable breakages due to insufficient lubrication. The cables can be lubricated as seen in the diagram.

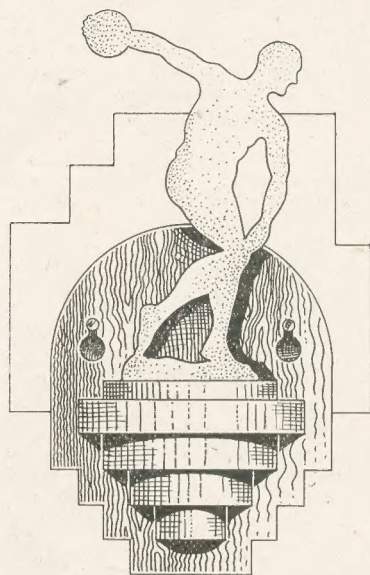


The tube is put on the end of the cable, oil is then dripped in, and the tube is nipped to force the oil down.

Glass Polishing

IF you do your own windows or pictures and wish to give them a good shine, here is a handy tip. First wash the window over with a cold solution of waterglass (1 teaspoonful to 4 pints of water), and then polish with a dry leather. The result is shiny and fresh-looking glass.

The use of odd wood and the fretsaw in making NOVEL WALL CUT-OUTS



THOSE who belong to an Athletic Club or Youth Club will, no doubt, be interested in the novel wall statuette ornament illustrated herewith. It is based on the well-known "Discus Thrower" bronze statue—the work of Myron, one of the earliest Greek sculptors—and is symbolic of the health and strength in athletic sports.

It certainly is novel and makes a fine ornament for one's "den" at home or the club. As you can see, too, it is a simple affair, but it suffices to show that you are interested in athletics.

It is made from odds and ends of scrap wood, with the statuette cut from $\frac{1}{4}$ in. fretwood, then bronzed and varnished. Other suggestions are mentioned which you can adopt according to available materials in the home.

Regarding the shelf, $\frac{1}{2}$ in. thick deal could be used throughout in the construction. It would look ideal if polished ebony black, or enamelled any bright colour.

Drawing the Statuette

If you are not much good at drawing, it would be better to enlarge the outlines of the statuette plotted in $\frac{1}{2}$ in. squares at Fig. 1. If you rule your paper in full size $\frac{1}{2}$ in. squares as shown, then carefully follow the lines, you should, in spite of your inability to draw, get the enlargement fairly accurate.

Completing the Statuette

Having got the actual size of the statuette drawn, with the aid of

carbon paper, trace the shape down on a piece of $\frac{1}{4}$ in. wood, then cut it out carefully with the fretsaw. Failing $\frac{1}{4}$ in. plywood, $\frac{3}{16}$ in. stuff could be used.

If you use this, you must—when marking out the base piece at Fig. 3—make the mortise $\frac{3}{16}$ in. wide. You could, by the way, also use $\frac{1}{2}$ in. plywood for the statuette and base piece.

Cut from Aluminium

Another idea is to cut the statuette from a piece of polished aluminium sheeting. The tenon shape is bent backwards to right angles (after drilling two screw holes through same) and the figure then secured with small roundhead screws to the wooden base.

You can obtain $\frac{1}{16}$ in. thick aluminium sheeting from some coach-building yards, where suitable scrap pieces are sure to be about. One could use brass sheeting, but although this is more easily obtained and cheaper, it is not so easily cut and lacks the bright finish of aluminium.

Naturally, of course, you can only

MATERIALS REQUIRED

- 1 piece fretwood (statuette) — 6ins. by 3ins. by $\frac{1}{4}$ in.
- 1 piece fretwood (base)—3ins. by $\frac{1}{2}$ in. by $\frac{1}{4}$ in.
- 1 piece fretwood (back)—5ins. by 4ins. by $\frac{1}{4}$ in.
- 1 piece deal (shelf)—3 $\frac{1}{2}$ ins. by 2ins. by $\frac{1}{2}$ in.
- 1 piece deal (brackets)—6ins. by 6ins. by $\frac{1}{4}$ in.
- 1 bracket eye (optional)

cut metal with metal-cutting fretsaw blades, which are obtainable from Hobbies Ltd. The ordinary blades are intended solely for wood, and break in the softest of metal.

Finishing the Parts

If you have the fretwood statuette, glue it to its base after glasspapering all rough edges smooth. Give it a coat of bronze paint, and when this dries, apply a second coat.

To preserve the lustre of this paint, the work should be coated with pure shellac varnish. Brush it on quickly and sparingly.

Now to make the shelf. Only half of the shape of the shelf back is shown at Fig. 2. The complete shape must be drawn up and traced upon $\frac{1}{2}$ in. plywood. Plain wood $\frac{1}{2}$ in. thick could be used, but $\frac{1}{4}$ in. stuff is suggested owing to the difficulty of cutting the shelf mortise in the former.

Having cut out the back, cut out the three semi-circular bracket pieces. The first of these is $\frac{3}{8}$ in. less in radius than the shelf piece; the second piece is less $\frac{3}{8}$ in. again, and so

is the third piece which has a radius $\frac{1}{4}$ in. to make a 1 in. semicircle.

Gluing

Before gluing the bracket pieces beneath the shelf (which is glued to the back first), smooth up the edges with coarse and fine glasspaper. The semi-circular pieces are secured with glue in the order as seen by the illustration.

As to attaching the shelf to the wall, a screw eyehole is cut in the back as detailed at Fig. 2. If you

Look out for further similar Figures of Cricket and Tennis

like, two eyeholes could be cut in the back as in the illustration.

If you dislike either, small brass bracket eyes could be used. One in the centre, at the top of the back, would serve.

Black Finish

As previously mentioned, the finish for the shelf is ebony black. A bright green enamel finish would be attractive, including a deep blue colour, but any colour or shade is suitable. A piece of green baize could be glued to the base of the statuette.

Some further statuette features of a similar character, and dealing with tennis and cricket will appear later.

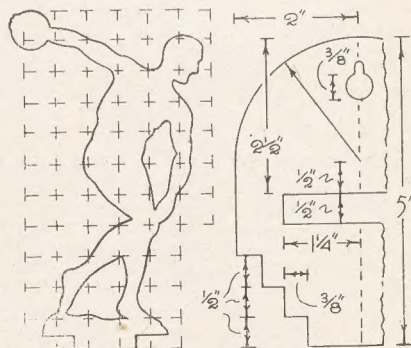


Fig. 1—The statuette figure marked into $\frac{1}{2}$ in. squares

Fig. 2—Half the back with dimensions

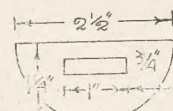


Fig. 3—The base

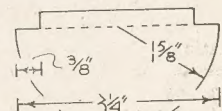


Fig. 4—The shelf

There is something attractive and unusual about SILK SCREEN PRINTING

WE have recently received from a reader some particulars of a craft called silk screen printing. It is akin to stencilling, and gives pleasing results, judging by the samples of work kindly sent us. It should be particularly welcome where several repetitions of a design are desired, and using the special paint recommended, produces a result of good body colour, with a grained surface that is attractive. As other readers may like to try their hand at this craft, particulars are given here.

The apparatus required consists of a frame covered with silk, and hinged to a baseboard. Quite a simple affair, and a squeegee for applying the coloured paint. The first is drawn in Fig. 1 and shows it ready for use, with stencil complete. The whole can be made of deal or other wood $\frac{1}{2}$ in. thick.

Baseboard

The baseboard measures 9 ins. wide and 12 $\frac{1}{2}$ ins. long, with the surface quite flat and smooth. At each end, underneath, a batten is glued across to prevent warping. The front batten can be 1 in. wide, and the rear batten 1 $\frac{1}{2}$ ins. wide.

In the rear batten a hole should be bored through at 1 in. from each end of the size to admit a 2 in. iron bolt. Then, at $\frac{3}{4}$ in. from the rear edge of the baseboard, saw through both baseboard and batten. The strip thus sawn off should then be refixed again to the baseboard with the bolts, as in Fig. 2. The reason for sawing this strip off will appear later.

The frame is made of 1 in. wide strips of wood to the dimensions given in Fig. 1, and is jointed at the corners with a simple halved joint, as will be seen in detail sketch, Fig. 3.

This diagram shows how the frame

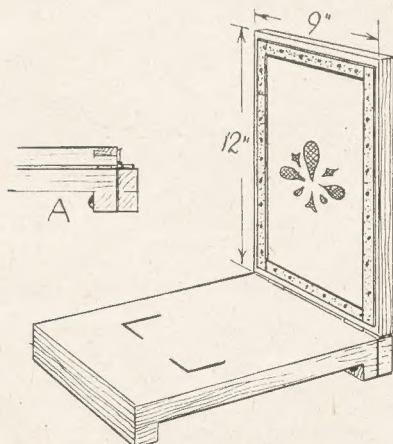


Fig. 1—The complete piece of apparatus



Part of a fretwork design which forms an ideal subject for this work

is to be covered with the silk, which forms the screen, a part being removed to show the frame beneath it. The silk should be of strong texture and not too fine a weave. The kind of stuff you would choose if you wished to make a fine sieve is ideal for the purpose.

This is tacked to the underside of the frame through narrow strips of cardboard, to prevent tearing the material. It should be stretched tightly across as it is being tacked. When this part of the work is done, the frame is placed on the baseboard, silk downwards, and hinged to the removable strip at the rear with a pair of 1 in. iron or brass butt hinges, as in detail, A, in Fig. 1.

Paint with Dope

Paint the frame with aeroplane dope, to prevent the paint sticking to it too much after use, and extend the dope to about 1 in. all round the silk on the inside of the frame. Before work can be commenced, the stencil decoration must be neatly cut on a

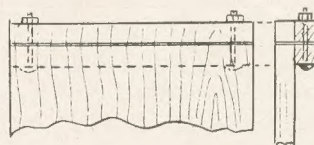


Fig. 2—Front and end view showing strip in position

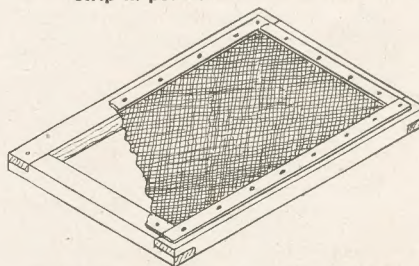


Fig. 3—The silk on the framework, cut-away at the corner for clarity

sheet of thin white paper the size of the silk, less frame, or a shade smaller, if convenient.

Should the stencil be much less, a mask of paper must be added, so that the silk screen underneath is covered over, to prevent any of the paint working through the screen except through the stencil. Lift up the frame and stick the stencil to the silk screen with a suitable glue.

Applied in Spots

The adhesive should not be spread over the face of the stencil, but applied in spots, especially where the fragile parts are, such parts as are likely to tear or ruck up as the work proceeds. The diagram, Fig. 4, will make this clearer, as the best places to apply the adhesive are shown by shaded spots.

The stencil is then pressed down on the silk carefully, and when the adhesive has dried, the work can be commenced; at least, when the squeegee is obtained or made.

This article is shown, front and side view, in Fig. 5. It is quite a simple affair, consisting of two pieces of $\frac{3}{8}$ in. wood or thereabouts, holding between them a strip of rubber 1 $\frac{1}{2}$ ins. wide and the same length as the squeegee. The wood pieces should be rebated on their inner faces just enough to admit the rubber when fastened together. They are screwed together and a $\frac{1}{2}$ in. hole bored through above the rubber into which a piece of round wood rod can be glued as a handle.

The Handle

The handle is entirely optional, it makes for convenience in using the squeegee, but the latter can be operated without it. Force the rubber in position, and fix it there by driving a few nails through the wood holder.

To work the apparatus, place a
(Continued foot of page 280)

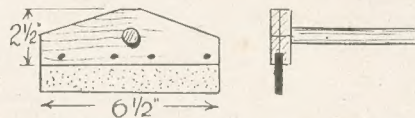


Fig. 5—Details of the squeegee for printing



Fig. 4—Adhesive is added in spots

After our instructions, the handyman can easily make a METAL SOAP-BOX

ANY housewife will appreciate this neat kitchen soap-box, which can be quite easily made if you closely follow the accompanying diagrams, and remember the hints on metal work given in our previous articles on the subject. The container consists of three parts—the main backplate—the actual box itself, and the loose perforated bottom that goes inside.

The Backplate

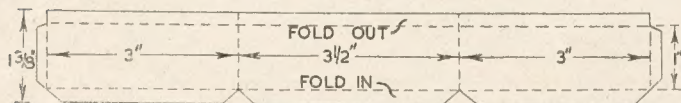
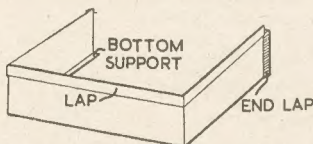
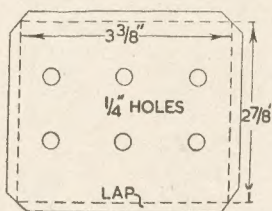
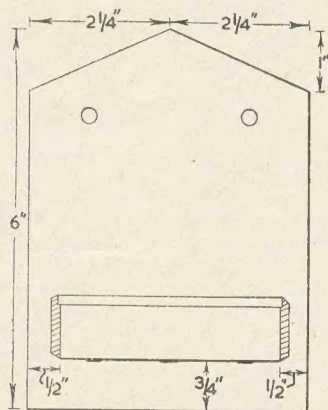
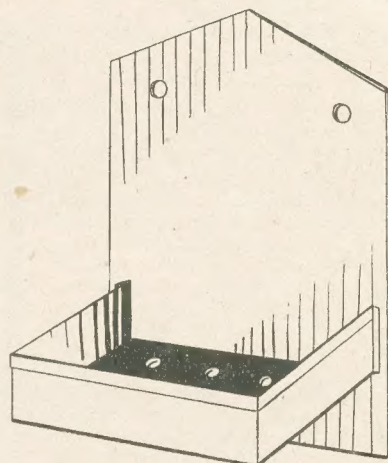
To make this part, get a piece of rather stout material and mark out a pattern according to the diagram. After cutting out, mark the position of the two $\frac{1}{8}$ in. screw holes and punch through, with the material resting on a piece of hard wood.

After punching, file resulting burr

Now we come to the actual box portion, and for this you need a piece of clean thin material, roughly 10 ins. by $1\frac{1}{2}$ ins. On this must be marked out the pattern as indicated. After cutting, file edges smooth, and then mark a $\frac{1}{8}$ in. margin along the top edge.

Knock over this lap, using a mallet and the edge of your bench-iron. Knock down flat, and tap lightly with hammer to smooth up. Secondly, knock over the bottom laps in the same way, but in the opposite direction to the top laps.

These must, however, be left at right angles, as they are to form the support for the loose bottom. Having achieved your top and bottom laps, the next job is to bend the box into shape. This can be easily done on a corner of the bench iron.



right off the back edge and then smooth up all of them, taking off all sharp corners and finally going over with clean emery cloth.

Before leaving this part, it will be as well to mark off the position for the box portion, attached later.

Finally, to complete this portion, knock the end laps to right angles outwards, to form a joint between the box and the backplate.

The Loose Bottom

The loose bottom must be cut out

next and for this you can use the same thin material as for the box. Mark out a half rectangle, 3 ins. by $3\frac{1}{2}$ ins. and allow a $\frac{1}{8}$ in. lap on each side. After cutting, file smooth, and then knock over the lapped edges, flattening them right down smoothly.

Set out the drainage holes as in the pattern, or in any design you wish, and punch through in the same manner as the screw holes.

In this case, however, do not file the resulting burr off. Merely smooth off rough edges and leave counter-sink intact, to allow water to drain.

To Assemble

To assemble, take the completed box portion, and place in position, with the back plate flat down on the bench. Apply flux liberally, and, with a well heated iron, tack in place. After checking that the box is set square, solder firmly to backplate.

Clean off flux with a damp rag, drying afterwards before a fire. File off all surplus solder, and give the whole job a good rubbing over with fine emery. Insert the loose bottom, and the box is completed.

Two coats of light blue enamel will impart a clean and attractive finish and make the soap box equal to its professionally-made counterparts.

Screen Printing—(Continued from page 279)

sufficient quantity of the stencil paint inside the frame at the front, just below the stencilled pattern. Place the paper or other material to be printed on the baseboard, bring the frame down and, with the squeegee, take up a little of the paint and draw it down the silk. This will force the paint through the screen and stencil on to the paper beneath.

Lift up, remove the printed pattern, then repeat the operation according to the number of copies required. Guide lines can be painted

on the baseboard to help place the papers, etc., in the correct position to be printed on and ensure registration.

When the work is finished, remove the frame from the baseboard by loosening the bolts, and clean off paint and stencil. The advantages of the removable strip to which the frame is hinged will now be apparent, as it is much easier to clean the frame after use, detached, than it would be if permanently attached to the baseboard.

To clean, first remove the paint from the frame with paraffin, then clean the silk screen with petrol. Finally remove the stencil and patches of adhesive with the application of hot water.

Ordinary paint cannot be used for silk screen printing; what is required is a special kind known as silk screen paint. If any difficulty is experienced in obtaining it, an address from which small quantities can be bought can be supplied on request.

How Model Railway enthusiasts can build a modern STATION FOOTBRIDGE

A MODEL railway built without any relief to its flat surface is apt to look rather dull and uninteresting. There are, of course, many ways of effecting the necessary improvements in this direction, such as the erection of signal gantries, station buildings, water-towers and other raised structures. One of the most easily-constructed accessories which will do most to relieve the monotony of an all-level layout is, undoubtedly, a station footbridge.

In this article is described an adaptable design for a station footbridge in "O" gauge.

Three Usual Types

Many readers will, no doubt, have noticed that the average station footbridge will fall under one of three structural categories, which differ in the manner in which the

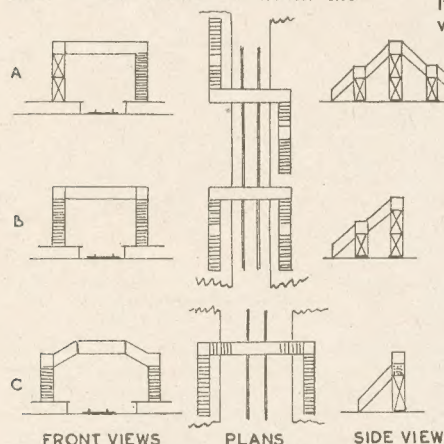


Fig. 1—Three views of the three general types

wing stairways approach the top arch or girder-span.

These three main types are shown in simplified diagram form in Fig. 1, A, B and C. It will be seen that types A and B may be produced readily from exactly similar parts, being merely assembled differently to suit the station platforms upon which the bridge is to be used.

These parts consist of four short square pillars, two long square pillars, four long flights of steps and appropriate side walling. The last mentioned is conveniently made from stout postcards if 1mm. plywood is unavailable.

The actual construction of the bridge does not offer any outstanding constructional difficulties. A study of the

diagrams and photographs should be all that is needed to produce a realistic model. There is, however, one thing which almost all model railway builders do which is wrong and calculated to ruin the appearance of any constructional building work. It is the fallacy of working with materials about twice as thick as they should be.

When building this footbridge in "O" gauge, the thickness of the side sheeting should not be greater than 1/16in. at the very most; which makes it 3ins. thick in 7mm. scale ("O" gauge). For "OO" scale building thin card of the "visiting-card" variety is amply thick enough. It is a good plan to remember that, when working in this scale, every 1/32in. represents about 3ins. on the prototype structure.

The eight flights of stairs may be shaped from one length of wood and subsequently cut as required. The actual thickness of the wood used for this purpose

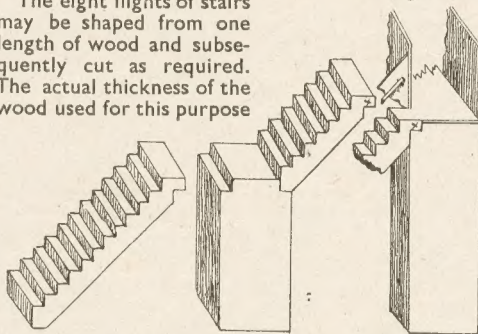
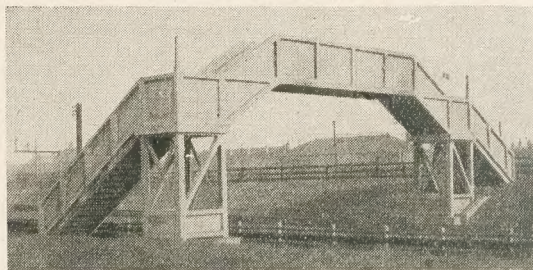


Fig. 2—The short steps and supporting pillars

is not critical, as the lower portion of the flights is hidden by the side-sheetings. This is applied on each side and fastened in place by glue or fine 3/8in. pins.

The square supporting pillars may, if desired, be replaced by round pillars (one at each corner), being, in



A concrete footbridge with one right angle and one straight approach

either case of such a height that the angle of the stairways is 45 degrees to the baseboard. The steps should also be cut to lie horizontal and vertical under the same conditions.

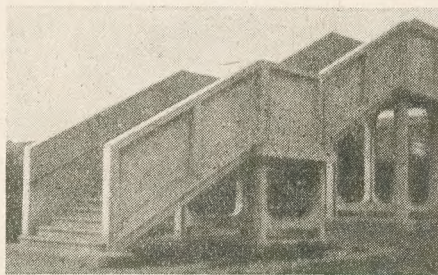
It will be found best to construct the stairways and pillars first (see Fig. 2), and to fit them to the main span. The latter should be of sufficient length to cross either one or two lines of track, as desired. The positioning of the main span side-sheeting is obviously determined by the

direction in which the stairways leave the span.

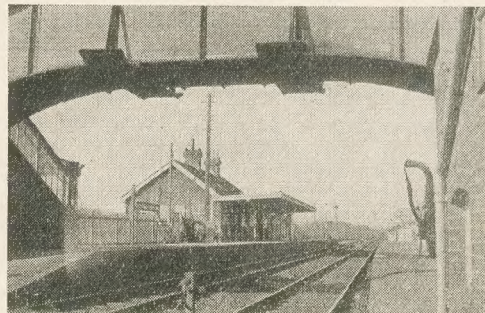
If they are both on one side, then the side-sheeting of the span will be shorter on that side by twice the width of the stairways. If the stairs turn left and right, then both the span side-sheetings will be of the same length (i.e., full span width less the width of one stairway) but staggered to allow entry from stairs to span.

Smoke-screens may be added under the span member as shown, so that they register with the railway tracks below. Alternatively, a smudge of black paint may be applied immediately over the tracks—on cross-span—to give effect of smoke stain from passing engines.

(Continued foot of page 282)



Detail of side panelling and pier support construction in a reinforced concrete bridge

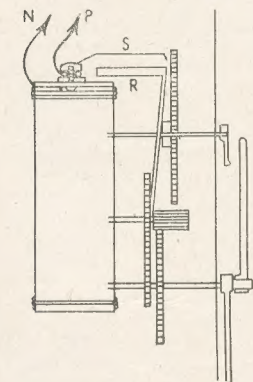


Under view girder type footbridge, showing smoke screen attachments

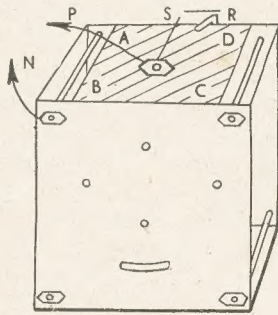
How a reader constructed for himself a novel AUTOMATIC RADIO ALARM

THE following notes were submitted by a reader (W. M. F. Ward of Killearn Hospital, Scotland) which we know will be of interest to others and as helpful as well as novel.

This morning I had an alarm clock which had refused to work owing to a mechanical defect and as it was past repair I simply had to devise a method of creating a noise at seven o'clock tomorrow morning. I had no materials to make the gadgets previously described in *Hobbies Weekly*, and as I live sixteen miles from the nearest big town, it was out of the question to get the materials, or a new clock.



Alarm release (R), contacts (S) and terminal connections



Alarm release and plate between clock plates

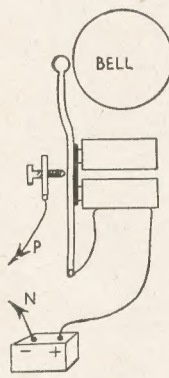
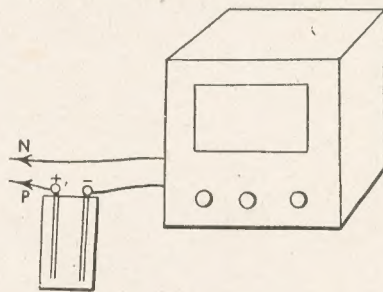


Diagram of bell and battery



Wiring to battery receiver

An idea occurred to me, off I went, and in less than an hour I had my result. The works of the clock were taken from its case and stripped of the alarm stop, which I thought would foul my switch. Thus ready I will take you step by step through the process and to make things as easy as I can, tabulate the steps and deal with one part at a time.

Steps in Construction

(i) Loosen the top two screws holding the front and back plates of the clock mechanism. Spring them apart sufficiently to remove the alarm stop arm, and any other part

in the alarm train of wheels which would touch, or earth the insulated terminal.

(ii) Cut a piece of insulating material (I used a piece of an old terminal strip and utilized the hole to take a convenient nut and bolt), drill a hole if necessary and fix your nut and bolt near the centre. This piece of material is now shaped until it is just a shade wider than the distance between the front and back plates.

(iii) Place the terminal strip between the front and back plates, then tighten up the frame bolts so that the strip is securely jammed into position.

(iv) Shape a piece of spring wire with a loop at one end to fit over your

terminal, and adjust the other end so the alarm release contacts it on its spring forward. Fix also one of the wires from the twin flex on to the terminal. This is what I have termed "P" or the positive lead of the circuit.

(v) The other wire from the twin flex is fixed to the nearest nut on the clock frame. This is termed "N" on the negative lead of the circuit.

(vi) The twin flex can be threaded out of the clock through the hole at the top that once held the alarm push stop. It might be advisable to cover the flex in the hole with a piece of rubber tubing or insulating tape to prevent chafing the flex.

Now the switch is ready, and I connected it in series with a battery and bell alarm. The clock was set and I patiently waited for the alarm to ring. It did, and I had to get up to switch it off, for it would ring on for hours, and there would be no chance, I thought, of sleeping in tomorrow.

Battery Connections

Still not satisfied, as I disliked the idea of a battery and bell adorning my dressing table, my thoughts went back to the automatic devices on the mains receiver. Why should the switch not work on my battery set? After all, I was only dealing with the low tension side of it, and the maximum voltage in an accumulator is only two volts.

I led one lead of my twin flex to the positive terminal of my accumulator, and connected the other to the spade

terminal on the lead from my set. It worked! The alarm went and the set started up at the pre-arranged time, and kept going for three-and-a-half hours until the alarm release reset itself and stopped it.

Of course it is a simple matter to make a two-way switch if you want to by-pass the alarm clock switch. But I am satisfied, I have set my alarm, selected my station, left on the switch at the set, and I can go to sleep knowing full well that I shall be awakened tomorrow morning by Big Ben chiming out its seven o'clock message. Do not, of course, forget to wind the clock.

Model Footbridge—(Continued from page 281)

In this and other details the photographs will offer many ideas for further improvements and addition of extra detail to the basic model.

It is well worth remembering that, when cutting out parts from cardboard, the process should be carried out upon a level metal surface (such as a sheet of thin zinc), using a single-edged safety-razor blade or a very sharp penknife.

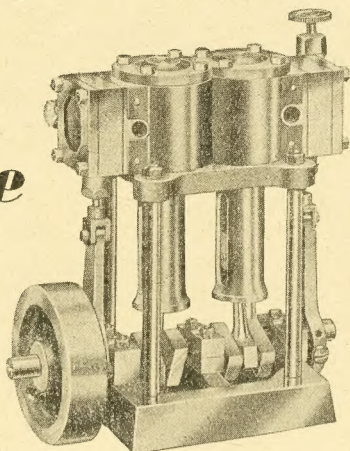
Nothing is so prone to produce a raggedly-built card model as the use of a poorly-sharpened cutting tool, and the use of it upon an irregular surface of wood as a cutting base. The grain of the wood bench tends to pull the cutting tool away from the straight-edge, and a clean straight line is almost impossible.

The stairways of the finished bridge should be mounted well back

from the station platform edge (about 1½ ins. in "O" gauge and 1 in. in "OO") if the whole assembly is to look really 'right'.

A coat of red oxide paint will produce a very serviceable-looking bridge, but the model may, of course, be finished off in the particular colour-scheme of the railway group or region being followed by the builder.

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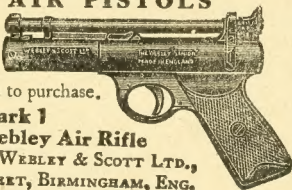
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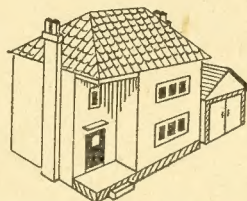


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